BlomWEB™ Viewer v1.0 Reference Guide

Audience: **Blom partners, clients and developers**

Date	Blom Document
February 2011	BlomWEB Viewer Reference Guide v1.0r1.1a.docx

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Revision History

Document Number	Issue Date	Reason for Change
BW_RG_1010	Feb 18th , 2011	Original Document

Table of Contents

1 What is BlomWEB™ Viewer? 2

1.1 What is in this document? 3

1.2 Accessing BlomWEB™ 3

1.3 Supported Platforms 3

1.4 New features 4

1.5 Document Organization 4

1.6 For more information 4

2 BlomWEB™ Viewer Basic Features 6

2.1 Accessing BlomWEB™ Viewer 6

2.2 BlomWEB™ Viewer Main Features 7

2.3 Navigating through the Map Interface (2D mode) 9

2.3.1 Panning the map 9

2.3.2 Zooming up and down 9

2.3.3 Switching views (ortho – oblique) 10

2.3.4 Map Locator 13

2.3.5 Searching for an address (geocoding) 15

2.3.6 Searching by coordinates 17

2.3.7 Re-sizing the screen 17

3 Advanced display tools 18

3.1 Map View 18

3.2 Hybrid view 18

3.3 Multiview 19

3.4 Display of external WMS services 21

3.5 Demo Layers 24

4 Measurement Tools 26

4.1 Length, and Length on the ground measurement 26

4.2 Area Measurement 27

4.3 Bearing Measurement 28

4.4 Elevation Measurement 29
4.5 Height Measurement 29
4.6 Diagonal (Ladder) Measurement 30
4.7 Erase Button 31

5 Annotation tools 32
5.1 Drawing shapes 32
5.1.2 Drawing text 34

6 Additional Tools 35
6.1 Reverse Geocoding tool 35
6.2 Show Coordinates tool 35
6.3 Year Selection tool 36
6.3.1 Year selection and MultiView 36
6.4 Oblique Selection tool 37
6.5 Imager Layer Priority tool 38
6.6 Overlay Selection tool 39

7 BlomURBEX 3D™ View Controls 40
7.1 Accesing the BlomURBEX 3D™ Viewer 40
7.2 Navigating through the 3D models 41
7.2.1 Navigation Pad 41
7.2.2 Mouse controls 41
7.2.3 Keyboard controls 41
7.3 Level of Detail (LOD) selection 41
7.4 Edit Mode 42
7.4.1 Changing textures in the building 43
7.4.2 Adding new buildings 43

Table of Figures

Figure 1: Blom Products Value Chain 2

Figure 2: Zoom in action 9

Figure 3: Windowed zoom 10

Figure 4: Ortho View to be changed to North View 11

Figure 5: North View 11

Figure 6: South View 12

Figure 7: Natural Oblique Image 13

Figure 8: Orthorrectified Oblique 13

Figure 9: Map Locator Window 14

Figure 10: Map Locator in "Map" mode 14

Figure 11: Geocoding Tool 15

Figure 12: OSM Geocoder Results 15

Figure 13: DeCarta Geocoding Interface 16

Figure 14: Coordinates Search 17

Figure 15: Changing to Map View 18

Figure 16: Map View 18

Figure 17: Changing to Hybrid View 19

Figure 18: Hybrid View 19

Figure 19: View selection control 19

Figure 20: Dual View screen with Map and North Oblique 20

Figure 21: Penta View with Ortho and 4 Oblique Views 20

Figure 22: 3D Viewer 21

Figure 23: Connect to WMS Server 21

Figure 24: WMS Server Selection 21

Figure 25: WMS Service displayed on top of Blom Ortho 22

Figure 26: Adding a new WMS server 22

Figure 27: WMS Server Added to the list 23

Figure 28: Selection of Demo Scenarios 24

Figure 29: List of Demo Scenarios 24

Figure 30: Demo scenario. Lidar Data on the Millenium Dome 25

Figure 31: Measurement Tools 26

Figure 32: Length Measurement 27

Figure 33: Area Measurement 28

Figure 34: Bearing Calculation 28

Figure 35: Elevation Measurement 29

Figure 36: Height Measurement 30

Figure 37: Diagonal Measurement Results 30

Figure 38: AnnotationsTools 32

Figure 38: Drawing Shapes 32

Figure 40: Drawing Points 32

Figure 41: Drawing Lines 33

Figure 42: Drawing Polygons 33

Figure 43: Drawing Text menu 34

Figure 44: Drawing texts 34

Figure 45: Additional Tools 35

Figure 46: Year Selection Tool 36

Figure 47: Multiview with different imagery years 37

Figure 48: Oblique Views Selection 37

Figure 49: Image Layer Priority 38

Figure 50: Street Layers Overlay selected over Oblique image 39

Figure 51: 3D View 40

Figure 45: 3D Navigation Pad 41

Figure 53: LOD Selection 42

Figure 47: 3D Model Selected in the Viewer 43

Figure 48: Texture Replacement 43

Figure 49: External 3D model dropped on the London 3D city model 44

SECTION 1

BlomWEB™ Viewer Overview

1 What is BlomWEB™ Viewer?

BlomWEB™ Viewer is a web-based application that allows its users to experiment all the features and power of the BlomURBEX™ and the BlomURBEX 3D™ geoservers.

BlomURBEX™ and BlomURBEX 3D™ are two online services provided by *Blom* from several computing centres world wide, offering a revolutionary collection of geographical datasets showing urban environments with high-definition real images and 3D textured models, extracted from at least five different views and accurately geo-referenced to fulfill both end consumer expectations and professional/engineering requirements.

As such, BlomURBEX™ and BlomURBEX 3D™ offer a wide set of APIs, GIS Plug-ins and SDKs for developers to create high added-value applications on a wide range of platforms an technologies on top on the rich and unique geographic content provided by Blom, and other contents provided by Blom partners.

It is convenient, tough, to have a ready-made viewer tool to access and work with the existing geographical contents in BlomURBEX™ and BlomURBEX 3D™ without the need of coding or developing it. This is where the BlomWEB™ Viewer plays its role.

BlomWEB™ Viewer makes full use of the BlomURBEX™ Javascript API in order to provide a wide showcase of BlomURBEX™ capabilities in terms of functionality and available datasets. This way, BlomWEB™ Viewer is located on top of the Blom Product Value Chain.

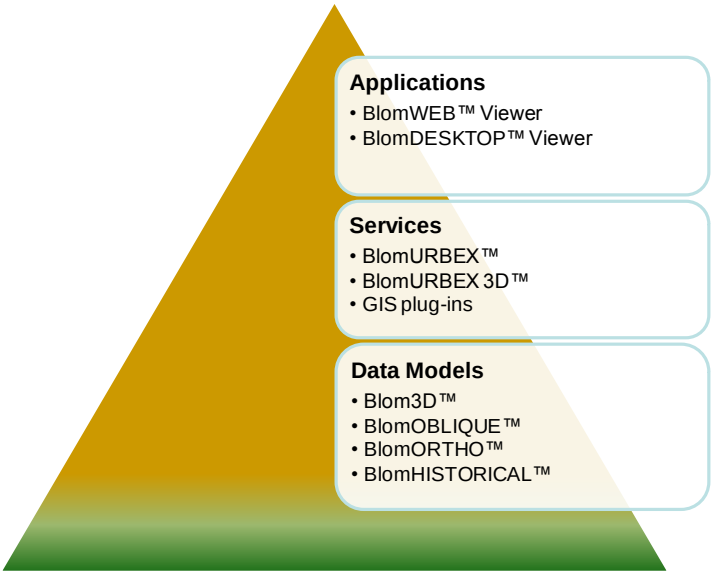


Figure 1: Blom Products Value Chain

With these assumptions, BlomWEB™ Viewer v1.0 has been designed to cover two needs:

a) Provide a simple yet powerful way to showcase BlomURBEX™ and BlomURBEX 3D™ features to Blom customers, and also be a demoing tool for the Blom Sales Force.
b) Provide a solid basic core for developers to create vertical web applications using the BlomURBEX™ Javascript API.

Future versions of BlomWEB™ Viewer will include additional tools and functionalities and will allow for greater interface customization capabilites.

1.1 What is in this document?

This document is a reference guide for BlomWEB™ Viewer. It provides a simple but detailed user manual covering all of its features.

1.2 Accessing BlomWEB™

BlomWEB™ Viewer is an online application, located at the following URL[1]:

http://www.blomurbex.com

Accessing BlomWEB™ Viewer requires the use of some valid credentials (user and password). The current version of the tool does not support online creation of credentials, so contact your local Sales Support representative to obtain a personal set of BlomWEB™ Viewer credentials.

1.3 Supported Platforms

BlomWEB™ Viewer runs on any Javascript-compatible web browser and it is OS-independent. It has been tested and is supported in Internet Explorer (versions 7 to 9), Mozilla Firefox 3.6 and Google Chrome 8.

Some exceptions must be considered:

- BlomURBEX 3D™ is supported only on Windows-based computers
- To run BlomURBEX 3D™ viewer on Google Chrome you need to have Mozilla Firefox installed as some components are shared.
- BlomWEB™ Viewer does not support mobile phone web browser, as events are not correctly interpreted by the Javascript components on those browsers.

[1] The same URL was hosting the previous BlomURBEX™ demo viewer. This old viewer has been substituted with the BlomWEB™ app on Feb.2011

1.4 New features

Since the release of the BlomURBEX™ service in 2008, a demo viewer has been available for accessing the BlomURBEX™ contents. BlomWEB™ Viewer is an evolution of that demo viewer and version 1.0 has the following new features:

- New measurement tools
- Blom Geocoding (direct and inverse)
- Coordinate display and coordinates search
- Baselayer control
- Date selection
- Overlay selections
- Display of vector data (Map View)
- Connection to external WMS servers
- Location Map included in the window
- Re-sizable map screen
- Dual and PentaView representation
- Launch of 3D viewer directly from the demo viewer

1.5 Document Organization

This document is divided in three sections.

- Section 1 is this introduction, covering an overview of BlomWEB™ Viewer and its role.
- Section 2 is the BlomWEB™ Viewer Reference, detailing all of its features and tools and being, in fact, a simple user manual that can be used for training purposes.

1.6 For more information

The **Product Roadmap** for BlomWEB™ Viewer detailing the content of future releases of the product is available separately by request, as well as the **Product Factsheet**. Contact your local Blom representative for accessing these documents.

If you want to know more about the BlomURBEX™ and BlomURBEX 3D™ features and capabilites, please refer to their respective **Whitepapers, API References** and **Factsheets**.

SECTION 2

BlomWEB™ Viewer Reference Guide

2 BlomWEB™ Viewer Basic Features

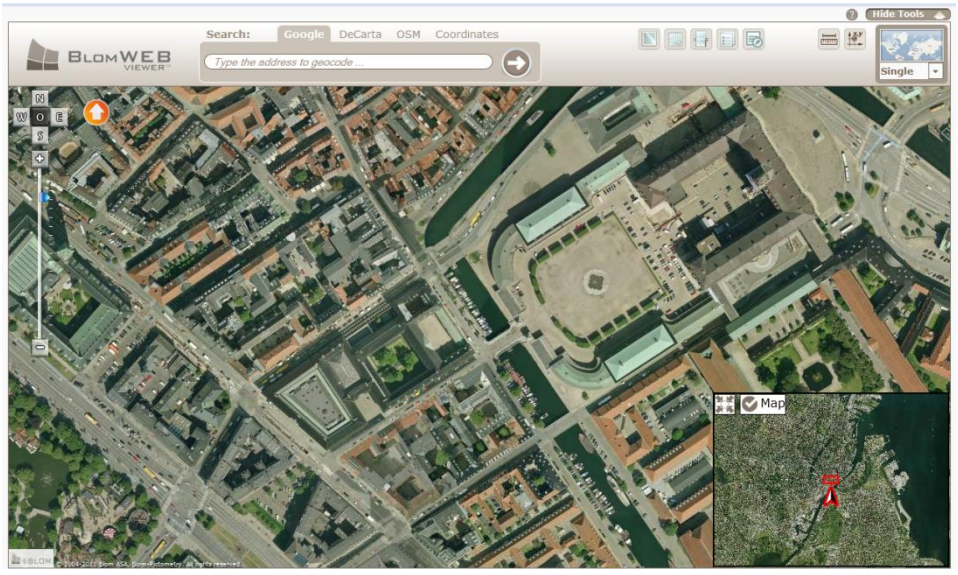
2.1 Accessing BlomWEB™ Viewer

As stated in the previous section, BlomWEB™ Viewer is hosted at:

http://www.blomurbex.com

To access the tool you will need to type in your credentials, provided to you by a Blom Sales Support representative.

This will lead you to the BlomWEB™ Viewer main screen displayed below. We will refer to this picture in the following sections to locate controls and functions.



2.2 BlomWEB™ Viewer Main Features

BlomWEB™ Viewer is a web-based viewer, built with the BlomURBEX™ Javascript API, and BlomURBEX 3D™ API, that provides full access to more than 4000 cities in Europe and vector map data for all of Europe.

As such, BlomWEB™ Viewer features can be summarized as:

- **Navigation capabilities:** BlomWEB™ Viewer allows users to search information and navigate through it in several ways.
    - Geocoding tool
    - Coordinates search
    - Zoom and pan
    - Map Locator
    - Display of ortho and oblique imagery as well as vector map data.

- **Extended visualization capabilities:** BlomWEB™ Viewer provides features that enhance the user experience when working with the existing geodata.
    - Dual View and Multi View
    - Easy connection to external WMS Servers
    - Street map overlay on Ortho and Oblique imagery
    - Quick selection of historical imagery
    - Multiple Oblique views for every point, easy to select
    - Base Layer selection capability
    - Overlay selection capability
    - Reverse Geocoding
    - Identification of coordinates on screen

- **Measurement toolkit:** BlomWEB™ Viewer provides a powerful set of measurement tools that allow users to perform calculations directly on the images without the need of coding or using external GIS Tools.
    - Length tool
    - Length on the ground tool
    - Area tool
    - Height tool
    - Bearing tool
    - Diagonal (ladder) measurement tool
    - Elevation tool

- **3D Capabilities:** BlomURBEX 3D™ Viewer is now integrated in the viewer making it possible to:
    - Display a specific model based on the available geo-coding tools.
    - Pan, rotate, zoom and tilt the camera to visualize the models
    - Change between the different available LODs for the models.
    - Select the desired level of quality for displaying
    - Enter editing model to add/delete buildings and change/add new textures

Future versions of BlomWEB™ Viewer will include additional features. Refer to the **BlomWEB™ Viewer Product Roadmap** for additional information.

The following sections detail all of these features.

2.3 Navigating through the Map Interface (2D mode)

The main feature of the BlomWEB™ Viewer is its map screen. This map screen allows the BlomWEB™ Viewer user to navigate through the geographical contents provided by the BlomURBEX™ geoserver, zooming and panning the imagery, adding overlays, performing measurements, and searching and querying for elements and addresses.

This section covers the basic controls for navigating the map control.

2.3.1 Panning the map

To move the image displayed, just right click with the mouse on any point on the map. The cursor will change to a cross shape, then you can drag the image to the desired location. New map areas will be downloaded from the server and shown on screen automatically

2.3.2 Zooming up and down

BlomURBEX™ geographic contents are organized in different zoom levels according to the resolution of the imagery. For example, standard 10cm urban areas are located in zoom level 20. There can be additional levels for higher resolution areas.

To change the zoom level of the images displayed you can:

a) **Use the mouse-wheel**. Move it upwards to zoom in, and downwards to zoom out.
b) **Use the zoom control** on the left side of the map. You can click on the "+" or "-" controls to produce a level by level zoom, or move the slide for quicker zooming to the desired zoom level.

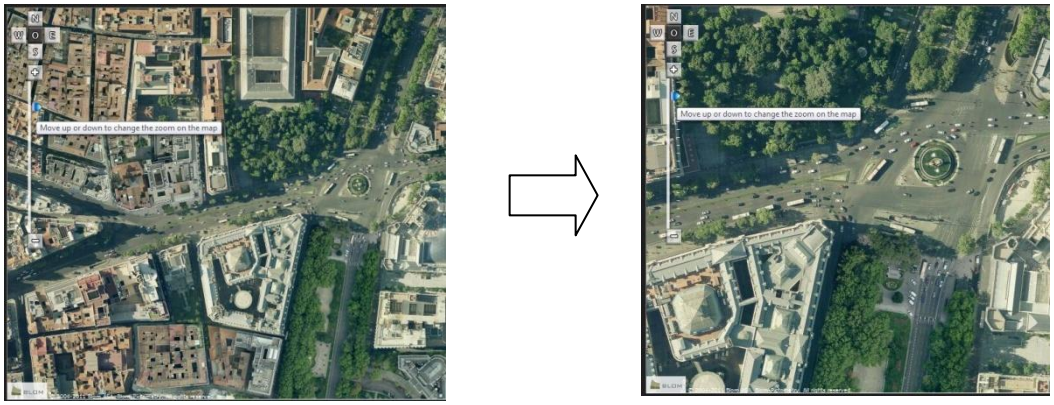


Figure 2: Zoom in action

c) Press the shift-key and drag and drop with your mouse to draw a rectangle on screen. The map will zoom to the area selected in the rectangle.

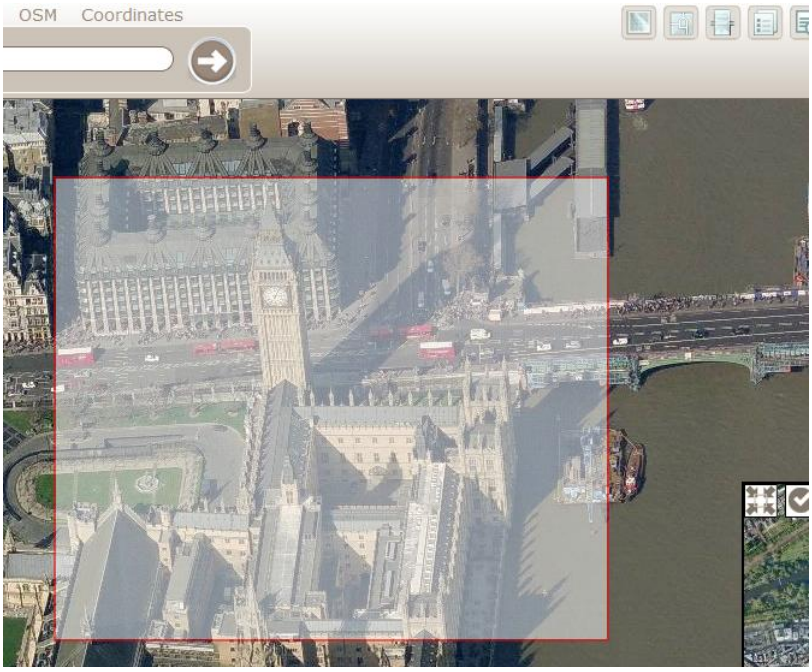


Figure 3: Windowed zoom

2.3.3 Switching views (ortho – oblique)

Blom has the capability to produce oblique georeferenced imagery for the entire territory of Europe. Images generated this way are a discontinuous set of images without re-projection that cover all of the points of the terrain from four angles (north, south, east, west) with a resolution **between 13 and 18 cm. per pixel**. The way in which the oblique flight is done, with several passes over the territory, guarantees that for each point of the terrain, there may be up to 18 different images, because a single point may appear in different oblique images. The BlomURBEX™ platform manages this set of images, isolating the end applications from the difficulties inherent in working with them. It also provides tools that make it possible to make measurements on the images, so that applications can, for example, calculate the height of buildings right on the images themselves.

In order to switch to a different view, use the view control located on the upper left side of the map viewer.

In this control, “O” stands for Ortho image (i.e., vertical view) and “N”, “S”, “E”, “W” are the four different orientations for the existing oblique images.

In the following example there is a vertical image of a city square. Note the “O” is highlighted in the View Control.

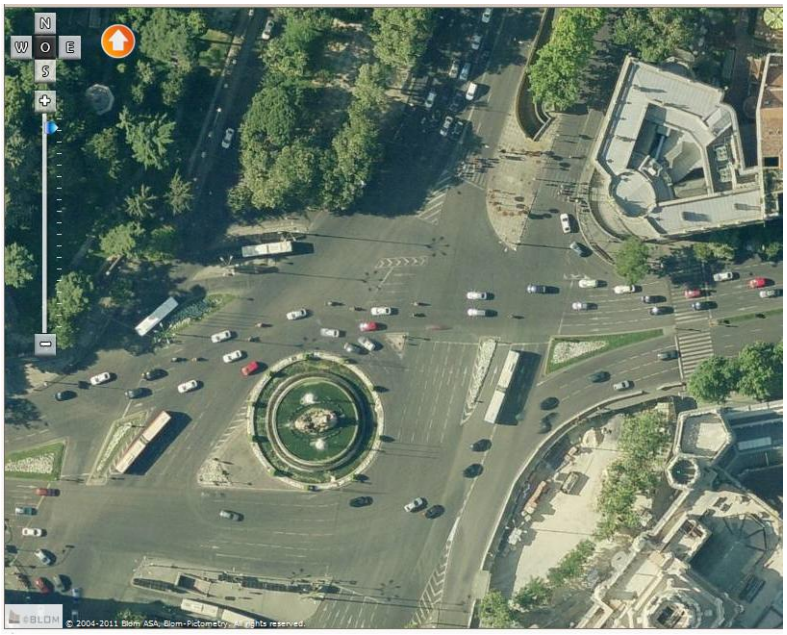


Figure 4: Ortho View to be changed to North View

Clicking on the “N” for North View on the View Control, you will directly switch to Natural Oblique North View, as seen below. Note that the “N” control is highlighted after clicking on it to provide visual feedback on the current view. The arrow control, on the right, provides the location of the North according to the current view.

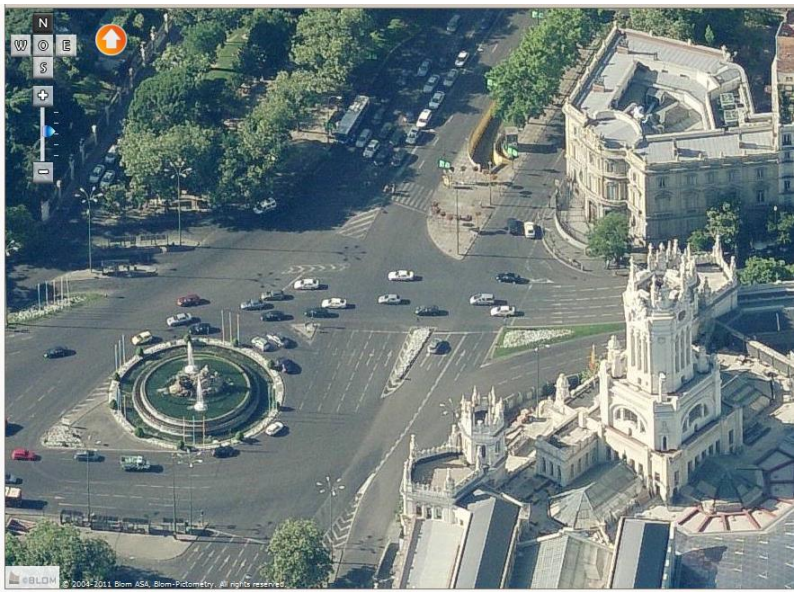


Figure 5: North View

Clicking on other views will change the image accordingly. Below you can see South View for the same area. Note that the “S” control is now highlighted, and the arrow is pointing to the direction of geographical North.

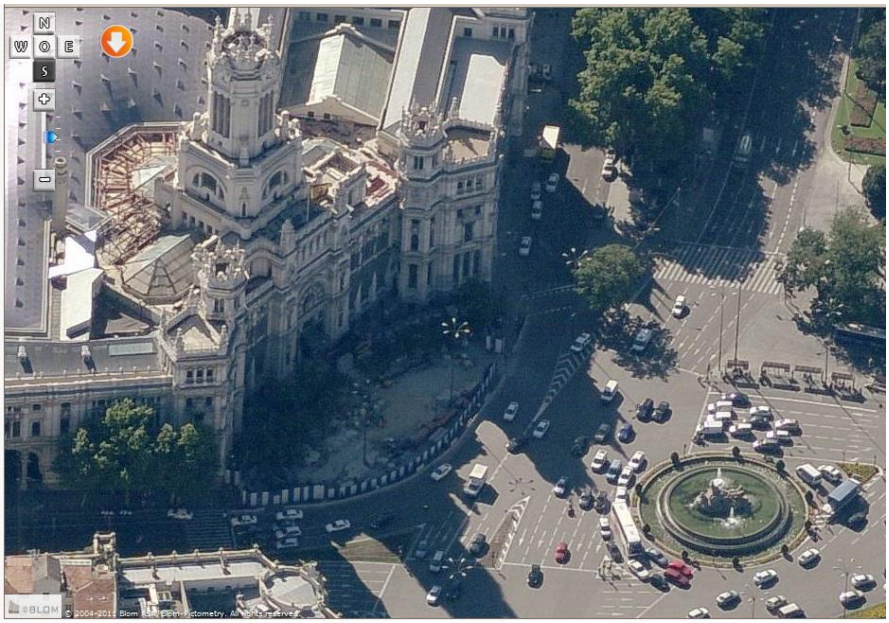


Figure 6: South View

2.3.3.1 *A note on Oblique Images*

BlomURBEX™ serves two kinds of oblique images: Natural Obliques and Orthorrectified Obliques.

Natural Obliques are the unmodified oblique images obtained during the capture process. Natural Obliques are discontinuous images (there is no a mosaic of images, as there is with the vertical ones) and due to this, when you pan them in the map viewer there can appear zones with vertical or horizontal black strips. These strips correspond to the area where the oblique image ends. BlomWEB™ Viewer automatically detects if there is another oblique image in the BlomURBEX™ database that better covers the current center of the screen and, if that is the case, it will retrieve and show it on screen providing the illusion of continuity in the image. When panning oblique images you can sometimes experience a displacement in the image and this is due to a new oblique image downloaded to replace the previous one.

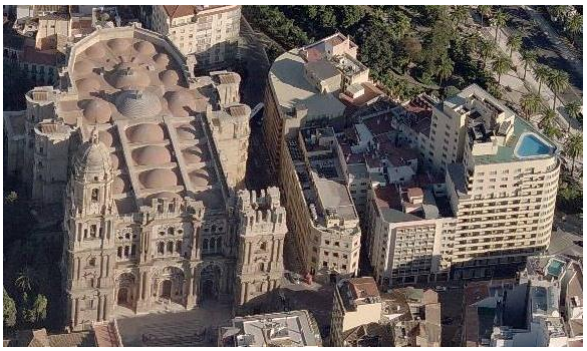


Figure 7: Natural Oblique Image

Orthorrectified Obliques are a continuous projected mosaic of oblique views. This mosaic provides a fluid oblique view from 4 angles (north, south, east, and west) with the oblique images projected, transformed, and orthorectified to correct elevation distortion. The resulting images show a certain degree of distortion that is noticeable at close-up zoom levels, but with the advantage that they are orthoimages, so they can be easily superimposed on other maps and processed continuously, making them ideal for **use in mobile devices and navigators**.

Figure 8: Orthorrectified Oblique

Another very important difference between these two sets of oblique images is that Natural Obliques allow for measurements (see section 4) and this is not possible on Orthorectified Obliques.

BlomWEB™ Viewer restricts the view of orthorrectified obliques to zoom level 16 or lower, to avoid showing the visible distortion on images at closer zoom levels.

You can visually be aware of the selected oblique set by looking at the "Ortho/Oblique" control on the upper left side of the map. When Oblique is highlighted, the shown image is a natural oblique (see **Figure 6: South View**), otherwise, the control would be highlighted as "Ortho".

2.3.4 Map Locator

The main map view in BlomWEB™ Viewer includes a smaller window showing a greater extent of the current view and a red box corresponding to the location of the main view on it. This red box will appear flat on Vertical (Ortho) views, and slightly distorted when showing vertical view, as it will show the real orientation of the oblique view with relation to the vertical view. An arrow appears in the map pointing in the direction where the user is looking at in the main window.

This Map Locator window can be hidden/show by clicking on the icon located on its upper left corner. Current version of BlomWEB™ Viewer does not allow for re-locating it on the main viewer.

Figure 9: Map Locator Window

The Map Locator can be changed to Map View or Image View by clicking on the "**Map**" Button located on the Map Locator window. The **Map** button will remain highlighted to indicate it is on Map Mode. Press it again to return to Image Mode.

Figure 10: Map Locator in "Map" mode

The arrow in the Map Locator Window points in the direction that the "viewer" is looking at.

2.3.5 Searching for an address (geocoding)

Searching for a given site is one of the most common needs for a GIS tool. To this end, Blom provides two Geocoding tools integrated with the BlomWEB™ Viewer.

Figure 11: Geocoding Tool

These tools come from external providers and are described here. Blom disclaims any responsibility derived from outages, poor performance or any other issue related to this service provided by third party organizations

2.3.5.1 *OpenStreetMap Geocoder*

This service is available for any user of the BlomURBEX™ platform with a valid usertoken.

OpenStreetMap is licensed under the terms of the Creative Commons Attribution Sharealike 2.0 (http://creativecommons.org/licenses/by-sa/2.0/) and is a project to provide a free source of data and services at the worldwide level.

OSM-based geocoding follows a free text structure (see **Figure 11**, above). In some countries, the postal addresses may not include numbers and have only street directions.

To use this geocoding server in BlomWEB™ Viewer click on the "**OSM"** button on top of the geocoding tool. Fill in the required info and press Enter or click the arrow button. If more than one result exists it will be returned to you. Select the desired address from the list, and the location will be shown on screen.

Close
Choose from the optinos the Geocoder returned
Downing Street, Newtown, Cambridge, Cambridgeshire, East of England, England, CB2 3, United Kingdom
Downing Street, Winson Green, Sandwell, West Midlands, England, B66, United Kingdom
Downing Street, South Normanton CP, Bolsover, Derbyshire, East Midlands, England, United Kingdom
Downing Street, Piccadilly Village, Manchester, Lancashire, North West England, England, M13 9TU, United Kingdom
Downing Street, Ardmore, Carter, Oklahoma, 73401, United States of America

Figure 12: OSM Geocoder Results

2.3.5.2 *DeCarta Geocoder*

This service is not available for all users as it is a paid service and involves an extra fee on top of the basic BlomURBEX™ service. The service is based on a licence of the DeCarta worldwide geocoder

(http://www.decarta.com/) and the cartographic database from TeleAtlas. This way, the use of this geocoding service guarantees uniformity of results all over Europe and perfect location with the vector layers provided by BlomURBEX™ which are also based on TeleAtlas data (see section 3.1 for details).

DeCarta is a leading company in location-based services (LBS) and has a platform (Drill Down Server or DDS) that offers spatial services for LBS applications, including Internet search services. The DDS web services are deCarta's implementation of OpenLS: an OGC initiative for XML-based location services on the Internet. The DDS web services allow XML applications to be developed quickly, and Blom has implemented its geocoding service based on them.

In this case, the service does not allow free text, but rather is based on searches formatted with the following structure:

- Country:
- Portal Number
- Street Name
- City/Town
- Postal Code
- Province
- Not all fields are required, with the exception of the "Country" field

BlomWEB™ Viewer includes an access to this geocoding service to allow our users to experience its power. To use this geocoding server in BlomWEB™ Viewer click on the "**DeCarta"** button on top of the geocoding tool. The screen will change and the search fields will appear. Fill in the required info and press Enter or click the arrow button. Note that the **Country** field is mandatory. You need to select a country from the list provided.

Figure 13: DeCarta Geocoding Interface

Contact your local Blom Sales Support representative to acquire an additional access to this geocoding tool in BlomWEB™ Viewer if needed.

2.3.5.3 *Google Geocoding*

BlomWEB™ also allows you to use the Google Search Engine for geocoding. This possibility is included for demoing purposes only as the Google Terms of Service does not allow using it in commercial applications without also linking to their own map data.

To use this geocoding server in BlomWEB™ Viewer click on the "**Google"** button on top of the geocoding tool. Google geocoding is the default option when you enter BlomWEB™ Viewer. Fill in the required info and press Enter or click the arrow button.

2.3.6 Searching by coordinates

BlomWEB™ Viewer also allows for a coordinates search. The Coordinates search tool is also located in the geocoding section of the user interface.

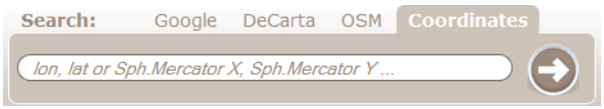


Figure 14: Coordinates Search

The text control provides a simple reminder of the format in which coordinates must be introduced. You can type the desired coordinates:

a) As a (Longitude, Latitude) pair, in decimal format. Example: -3.69, 40.42
b) As a (X,Y) pair, in Spherical Mercator projection. Example: 225485.2, 6250785.5

Once introduced, just press Enter or click the **Go** button to perform the search.

2.3.7 Re-sizing the screen

The map screen in BlomWEB™ Viewer resizes itself according to the size of the web browser being used. This is very useful for projector-based presentations, where maximizing the image area is desired.

Remember that you can put most web browsers in full-screen mode, thus fully maximizing the map area. Usually, the F11 key is used for this full-screen mode. Refer to your browser documentation for details.

3 Advanced display tools

3.1 Map View

In addition to its huge collection of hi-resolution georeferenced imagery, BlomWEB™ Viewer has the possibility to show a cartographic view of any area in Europe.

This map data comes from TeleAtlas vector data and is provided by UbiEst, a partner of Blom.

To change the image view to map view, just click on the "**Map**" button located in the upper section of the user interface.

Figure 15: Changing to Map View

The Map View will appear on screen centered in the same point that was previously shown on screen. Note that the screen view must be on **Ortho Mode** for the map view to properly appear.

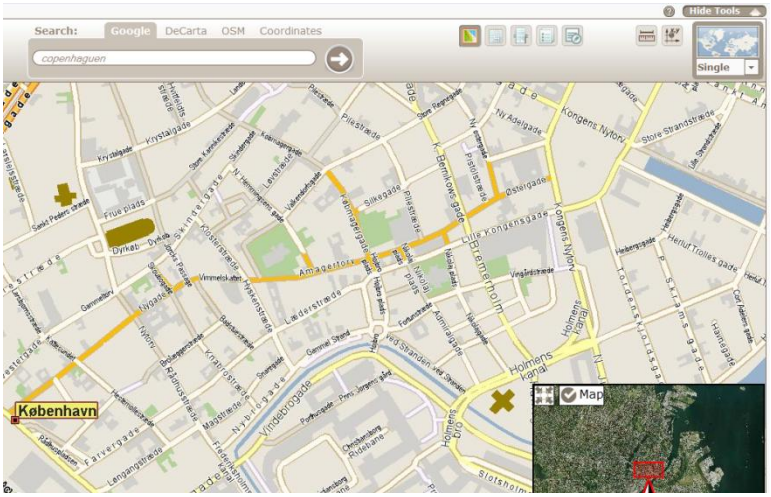


Figure 16: Map View

Also note that the "**Map**" button remains highlighted to show the screen is on Map Mode. Click on it again to return to Image Mode.

3.2 Hybrid view

The TeleAtlas vector data for Europe can be displayed on top of Ortho images creating an Hybrid View mode.

To change the image view to hybrid view, just click on the "**Hybrid**" button located in the upper section of the user interface.

Figure 17: Changing to Hybrid View

The Hybrid View will appear on screen centered in the same point that was previously shown on screen.

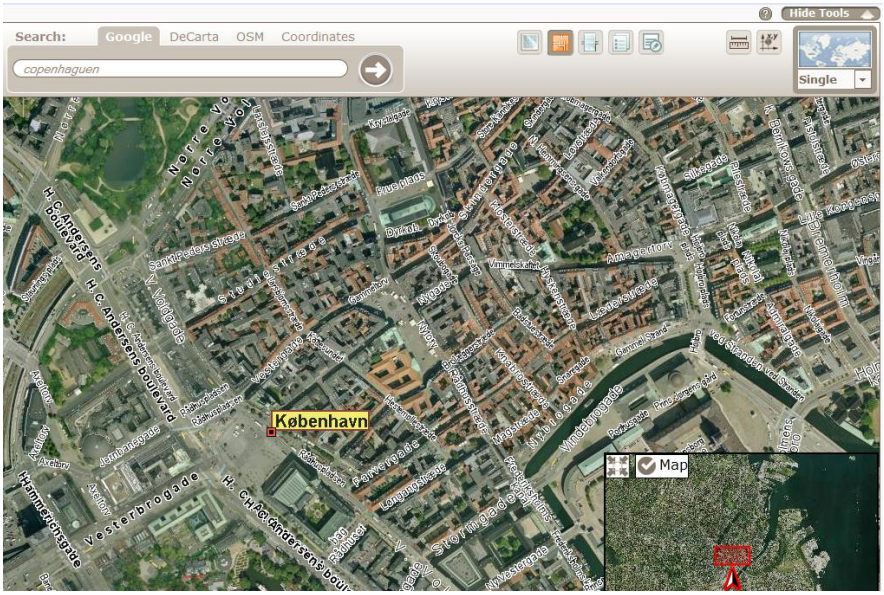


Figure 18: Hybrid View

Note that the "**Hybrid**" button remains highlighted to show the screen is on Hybrid Mode. Click on it again to return to Image Mode.

3.3 Multiview

BlomWEB™ Viewer allows splitting the screen and showing several simultaneous views of the same area, where the views are synchronized. This way, when you zoom/pan on any view, all other views redraw accordingly.

The multiple/single view is selected from the control shown below, located in the upper right corner of the interface.

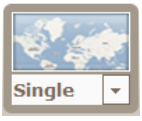


Figure 19: View selection control

Default view in BlomWEB™ Viewer is **Single View**. Available views are:

- **Dual View:** The Screen is split in two. One view is ortho view, and the other is North view. You can freely change any view to show the desired views. Left view can be changed to Map view if needed clicking on the **Map** button.

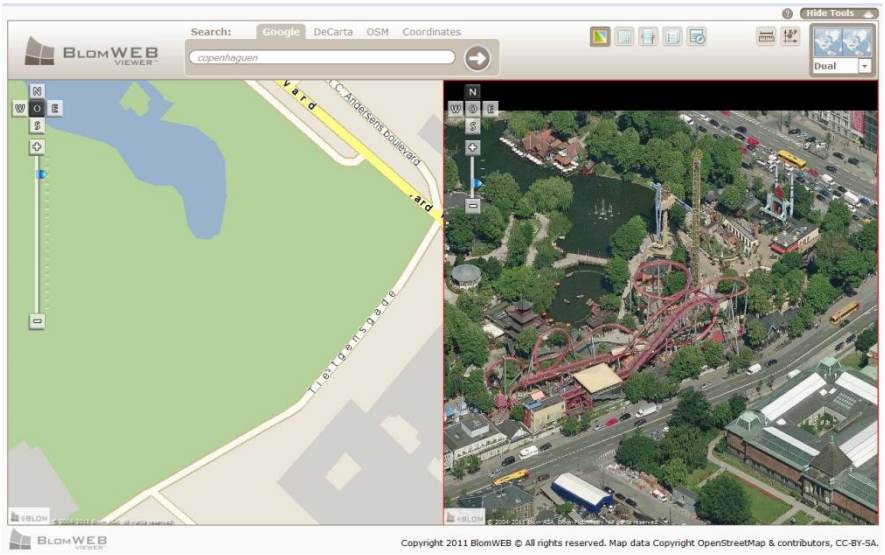


Figure 20: Dual View screen with Map and North Oblique

- **Multi View:** The Screen is split in five, showing the ortho view and the four oblique views for the selected area. You can freely change any view to show the desired views. Central view can be changed to Map view if needed clicking on the **Map** button.

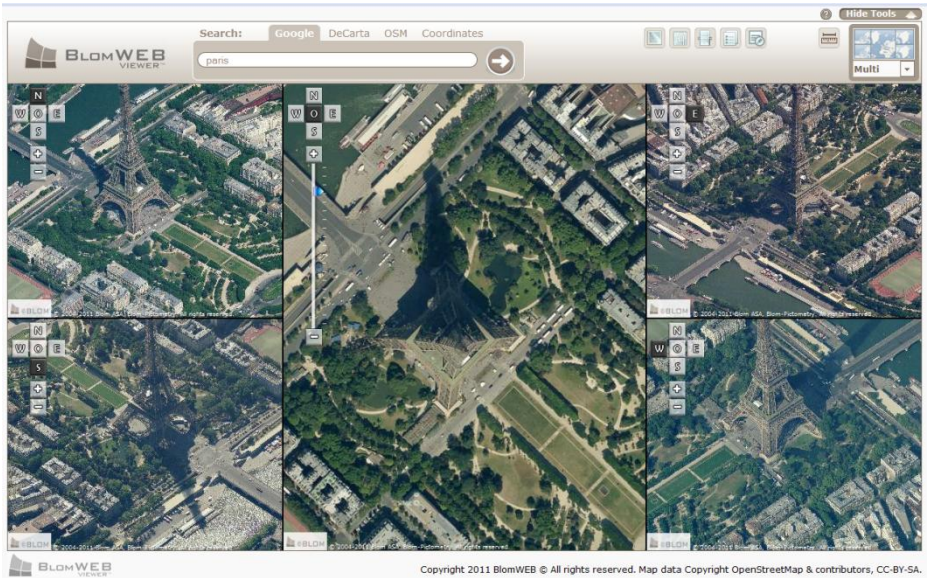


Figure 21: Penta View with Ortho and 4 Oblique Views

- **3D View:** Selecting this view will change the view to show the BlomURBEX 3D™ data for the selected area. The BlomURBEX 3D™ viewer has a different behaviour from the 2D View and is fully described on section 7 of this document.

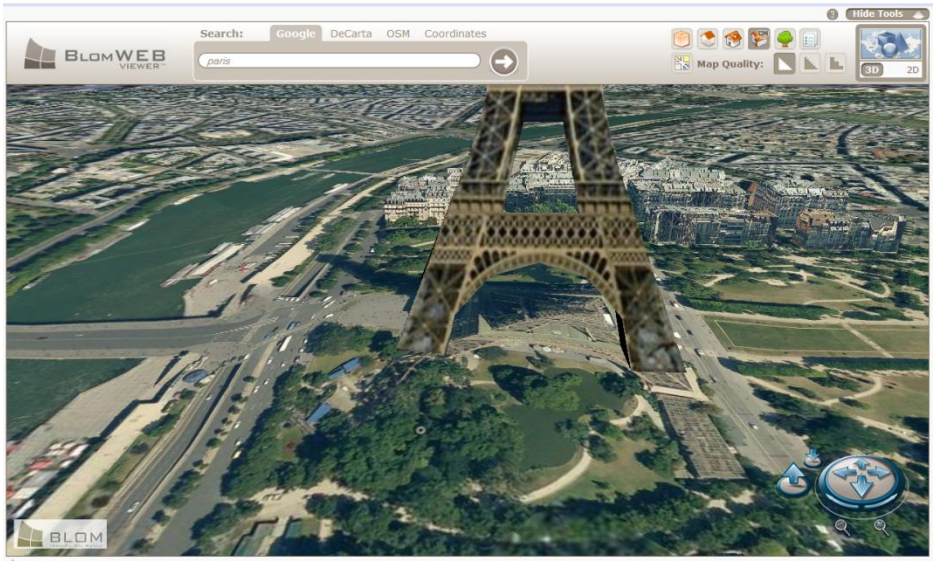


Figure 22: 3D Viewer

3.4 Display of external WMS services

The BlomURBEX™ Javascript API provides a convenient way to connect to external WMS servers and display their data on top of BlomURBEX™ imagery.

This API functionality is implemented into BlomWEB™ Viewer, so it is even easier to connect to external servers.

To connect to an external WMS server from BlomWEB™ Viewer, just click on the **WMS** button.

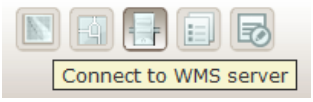


Figure 23: Connect to WMS Server

A pop-up Window will appear showing a list of pre-defined free-access WMS servers.

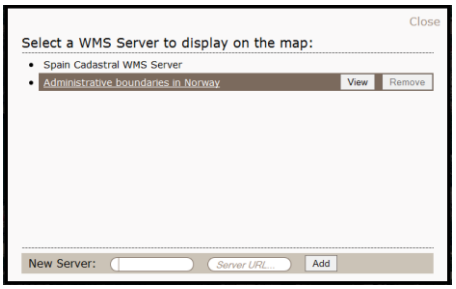


Figure 24: WMS Server Selection

Just select one of them, clicking on the **View** button, to display the data on top of the imagery. The button will become highlighted to show that the service is active. Hide the WMS Window clicking

on the “Close” button at the top right corner. If you want to hide the view of the WMS service, open the WMS Window again and click on the **View** button again.

The WMS services by BlomWEB™ Viewer are usually local services that provide information only for the selected country. Blom disclaims any responsibility derived from outages, poor performance or any other issue related to the service provided by third party organizations

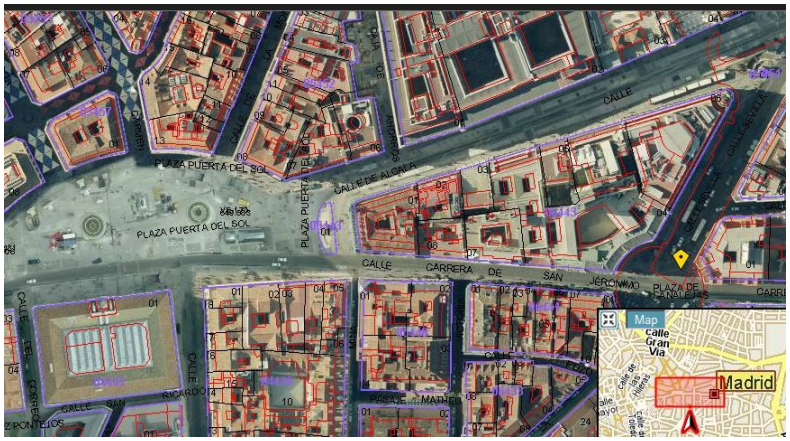


Figure 25: WMS Service displayed on top of Blom Ortho

If you want to display another WMS service, just type its **URL** and required parameters on the text field, including a **Name** for the service, and press the **Add** button (see **Figure 24**). The servers added will be stored in a cookie so they will be accessible on future sessions on the same computers.

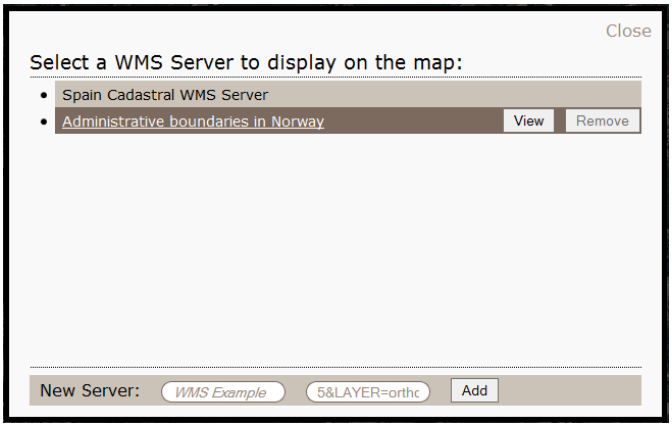


Figure 26: Adding a new WMS server

The server is added to the list of available servers. You can hide its display by clicking on the View button. To remove them from the list just click on the **Remove** button located at the right of every server. Note that the default servers cannot be removed.

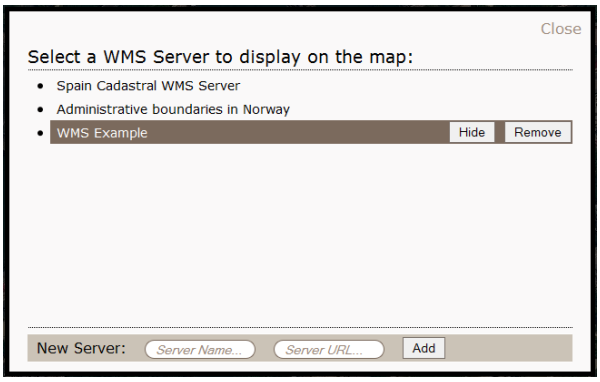


Figure 27: WMS Server Added to the list

3.5 Demo Layers

BlomWEB™ Viewer includes an easy way to access different demo datasets included in BlomURBEX™. These datasets include very high resolution (4cm) imagery on certain areas, LiDAR demo datasets or access to a BlomNAVIGATION™ example.

Access to these layers can be restricted according to your user credentials. Contact your local Blom Sales Support representative for additional details.

To select and view one of the available demo datasets, just click on the **Demo Scenarios** button.

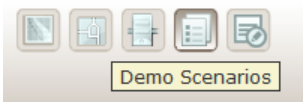


Figure 28: Selection of Demo Scenarios

A pop-up Window will open showing the list of available demos (according to your user credentials)

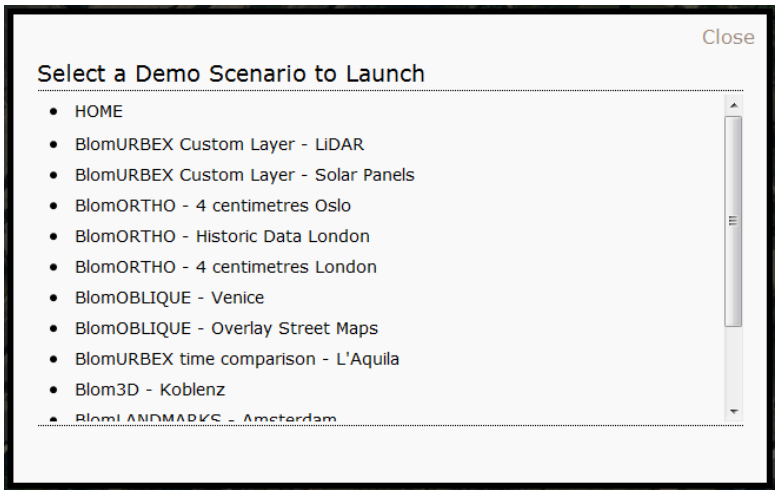

Close
Select a Demo Scenario to Launch
HOME
BlomURBEX Custom Layer - LiDAR
BlomURBEX Custom Layer - Solar Panels
BlomORTHO - 4 centimetres Oslo
BlomORTHO - Historic Data London
BlomORTHO - 4 centimetres London
BlomOBLIQUE - Venice
BlomOBLIQUE - Overlay Street Maps
BlomURBEX time comparison - L'Aquila
Blom3D - Koblenz

Figure 29: List of Demo Scenarios

Just click on the name of a scenario to display it on the BlomWEB™ Viewer screen.

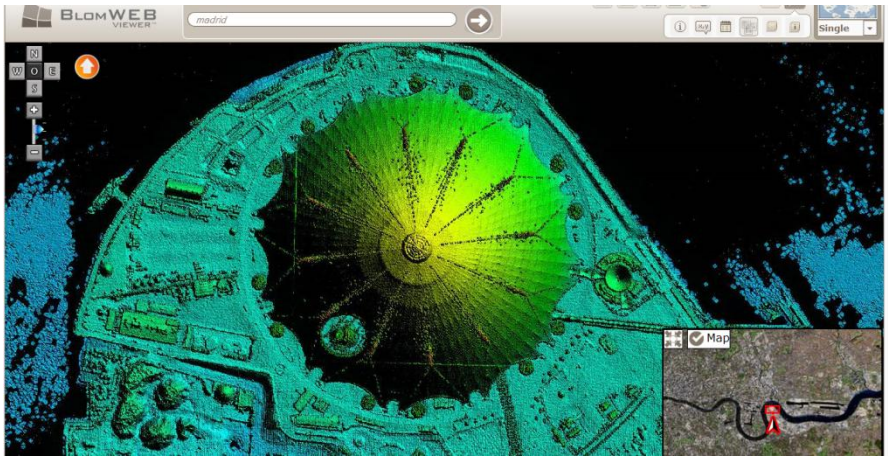


Figure 30: Demo scenario. Lidar Data on the Millenium Dome

The list of available demo scenarios is:

- **BlomURBEX™ Custom Layer – LiDAR:** rasterized image of a LiDAR dataset at the Millenium Dome, London.
- **BlomURBEX™ Custom Layer – Solar Panels:** Rasterised layer showing solar potential of roof panels, located at Bournemouth, London. Green represents areas > 30m^2, Orange is 25-30m^2 and Red is <25m^2.
- **BlomORTHO™ – 4cm Oslo:** 4cm Ortho Image of Oslo.
- **BlomORTHO™ – 4cm London:** 4cm Ortho Image of London.
- **BlomOBLIQUE™ – Venice:** Oblique imagery of Venice
- **BlomOBLIQUE™ – Overlay Street Maps:** Sample of rasterized TeleAtlas maps over Oblique images in Madrid.
- **BlomHISTORICAL™ – L'Aquila:** comparison of different imagery at L'Aquila, Italy (before and after the 2008 earthquake)
- **Blom3D™ – Koblenz:** Blom 3D model of Koblenz, Germany.
- **BlomLANDMARKS™ – Amsterdam:** Sample of BlomLANDMARKSTM models located at Amsterdam.
- **Blom3D™ – Rostock Ads:** Example of Advertisement placement over the 3D model of Rostock.
- **Blom3D™ – Munich Enhanced Urban Attributes:** Example of BlomNAVIGATION model over a section of Munich.
- **Blom3D™ – Rotterdam:** Blom3D model of the city of Rotterdam, Netherlands.

4 Measurement Tools

BlomURBEX™ offers a powerful set of measurement tools that can be directly applied on Ortho and Oblique images, providing a great added value for users. All of these tools are integrated into the BlomWEB™ Viewer interface for ease of use and access, and are described in this section.

To display the measurement tools, press the measurements button in the top of the screen.

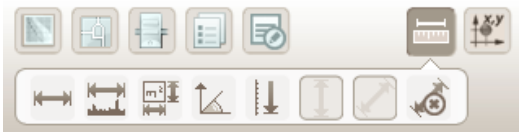


Figure 31: Measurement Tools

The available measurement tools in BlomWEB™ Viewer 1.0 are:

Tool	Description
	Length tool
	Length on the ground tool
	Area tool
	Bearing tool
	Elevation tool
	Height tool
	Diagonal measurement (ladder) tool
	Erase button

To perform any measurement, just click on the desired button. BlomWEB™ Viewer will then enter into Measurement Mode (the mouse behaviour will depend on the tool selected). To exit Measurement Mode click again on the tool button, or click on the **Erase Button**. Note that, while a measurement tool is selected, you can perform multiple measurements on screen. Press the **Erase Button** to clean the screen if needed.

4.1 Length, and Length on the ground measurement

This tool lets you perform length measurements on ortho or oblique images.

The length calculated with the Length on the Ground tool includes the internal DTM data in its calculations so changes in elevation are considered in the results providing accurate measures at ground level. The Length tool does not include elevation data so it provides bird's eye length.

Select the desired length measurement tool by clicking on the appropriate icon in the toolbar and follow this procedure for length calculation.

1. Click on a point to start measuring. A blue point will appear on screen
2. Move the mouse to paint a line, and click on another point to finish the line
3. Continue the procedure to draw additional lines if needed, or double click on the map to finish the measurement
4. The cumulative length at every individual line will be displayed on screen.

Figure 32: Length Measurement

4.2 Area Measurement

This tool lets you perform area measurements on ortho images by drawing irregular polygons on the BlomWEB™ Viewer screen.

Select the tool by clicking on its icon in the toolbar and follow this procedure for area calculation.

1. Click on a point to start measuring. A blue point will appear on screen
2. Move the mouse to paint a line, and click on another point to finish the line. Note the polygon is created on the fly so you won't need to close it.
3. Continue the procedure to draw additional lines if needed, or double click on the map to finish the measurement
4. The area of the resultant polygon will be displayed on screen.

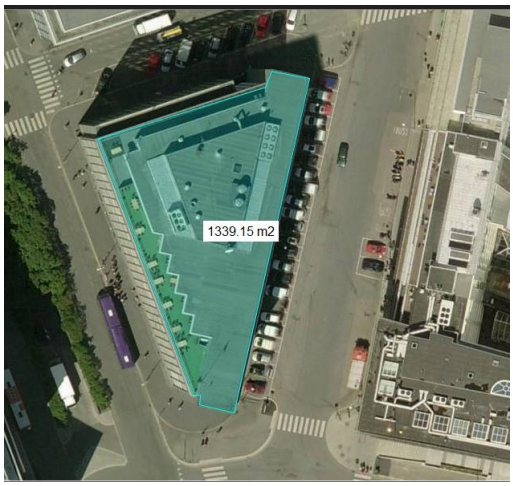


Figure 33: Area Measurement

4.3 Bearing Measurement

This tool lets you measure the bearing or azimuth (angle relative to the North) of a line.

Select the tool by clicking on its icon in the toolbar and follow this procedure for bearing calculation.

1. Click on a point to start measuring. A blue point will appear on screen
2. Move the mouse to draw a line.
3. Click again on the map to finish the measurement
4. The bearing of the resultant line, in sexagesimal degrees, will be displayed on screen.

Figure 34: Bearing Calculation

4.4 Elevation Measurement

All images available in BlomURBEX™ have been processed using a DTM. The elevation information of those DTMs is included in the server and can be obtained with a simple click, with the Elevation Tool.

Select the tool by clicking on its icon in the toolbar and follow this procedure for elevation calculation.

1. Click on a point to start measuring. A blue point will appear on screen
2. The Elevation of the point over the sea level will be displayed on screen

Figure 35: Elevation Measurement

4.5 Height Measurement

This tool lets you measure the vertical height from a point on the ground, on oblique images. This effectively lets you measure the height of any given façade.

Select the tool by clicking on its icon in the toolbar and follow this procedure for height calculation.

1. Click on a point on the ground to start measuring. A blue point will appear on screen
2. Move the mouse to draw a vertical line. Note that BlomWEB™ Viewer will only let you move up the Z axis.
3. Click again on the map to finish the measurement
4. The height of the resulting line will be displayed on screen.

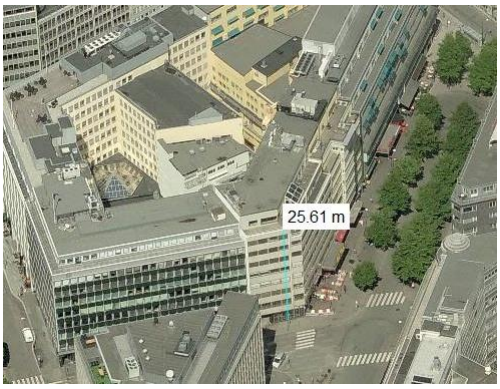


Figure 36: Height Measurement

4.6 Diagonal (Ladder) Measurement

This tool calculates the length of the hypotenuse of the triangle formed by a point on the ground and two points in a façade. This can be used to have an estimate of the length of the Fire Truck ladder needed to reach a certain window or height in a building.

Diagonal Measurement tool is only active in Oblique Image mode.

To perform a measurement:

a. Click on a point located on the ground. This will represent the location of the "Fire Truck"
b. Move the mouse and click on a point on the ground directly below the desired window (or height). This will be the corner of the triangle rectangle.
c. Move the mouse up in the façade and click on the desired height.
d. The hypotenuse (ladder) will then be drawn in red and its length will be displayed.

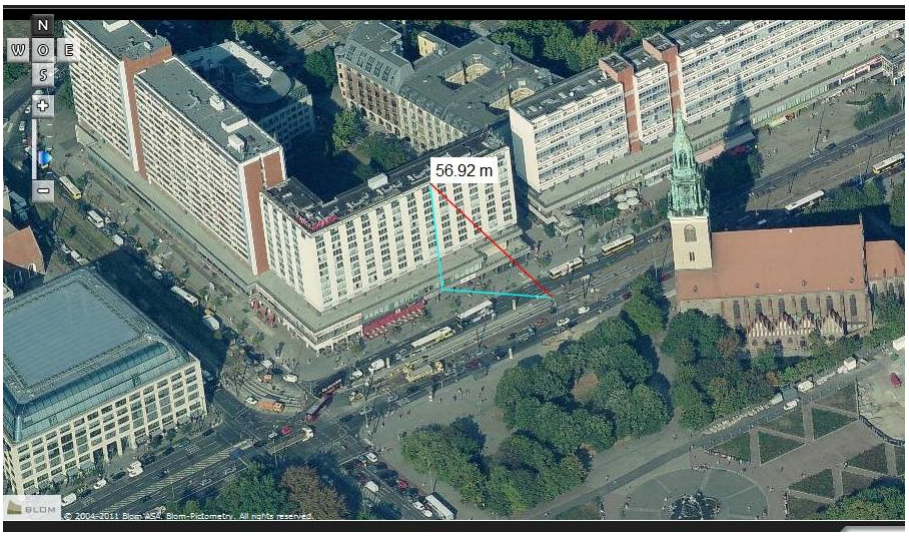


Figure 37: Diagonal Measurement Results

4.7 Erase Button

This button will erase all measurement data displayed on screen allowing you to start a new batch of measurements if needed. This button will also exit from any Measurement Mode you may be in.

5 Annotation tools

BlomWEB Viewer™ allows you to draw vector elements and text on top of the imagery. Possible options are Shapes and Text.

The Annotation tools can be accessed through the annotations button in the top of the screen

Figure 38: AnnotationsTools

5.1 Drawing shapes

This is the default option. From the annotations window you can select:

- The shape to draw (point, line or polygon)
- The colour of the shape

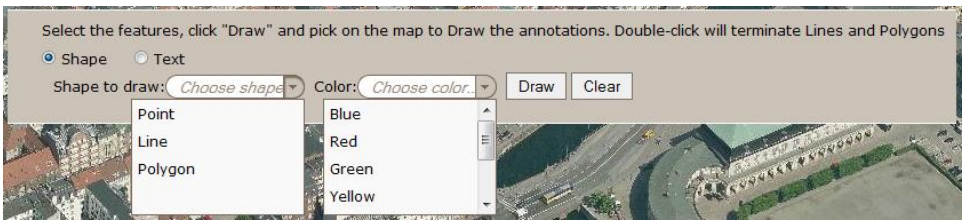


Figure 39: Drawing Shapes

5.1.1.1 Drawing points

- Select the desired colour for the points
- Click the **Draw** button to start drawing
- Click on the map to draw a point on the selected position
- Click on the **Stop Drawing** button to finish drawing points
- Click on the **Clear Annotations** button to erase all annotations

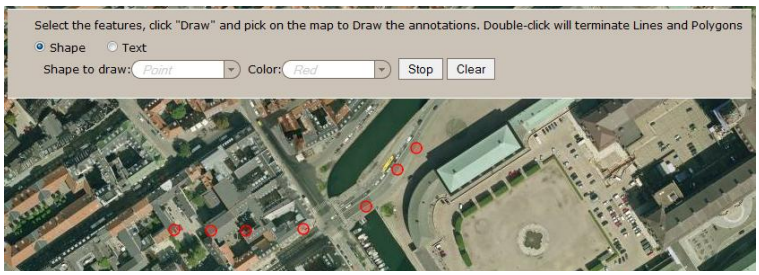


Figure 40: Drawing Points

5.1.1.2 *Drawing lines*

- Select the desired colour for the lines
- Click the **Draw** button to start drawing
- Click on the map to draw a point on the selected position
- Drag the mouse to start drawing a line
- Click on the map to draw a vertex, and continue drawing the line
- Double click on the map or Click on the **Stop Drawing** button to end drawing the line.
- Click on the **Clear Annotations** button to erase all annotations

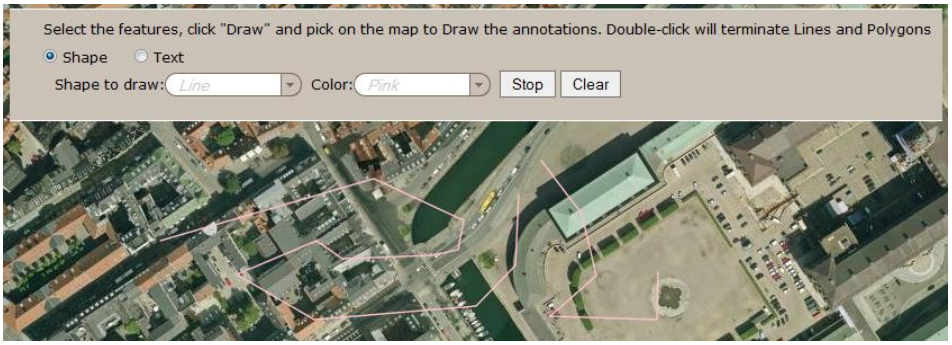


Figure 41: Drawing Lines

5.1.1.3 *Drawing polygons*

- Select the desired colour for the polygons
- Click the **Draw** button to start drawing
- Click on the map to draw a point on the selected position
- Drag the mouse to start drawing a line
- Click on the map to draw a vertex, and continue drawing lines. Note that the polygon will auto-complete
- Double click on the map or Click on the **Stop Drawing** button to end drawing the polygon.

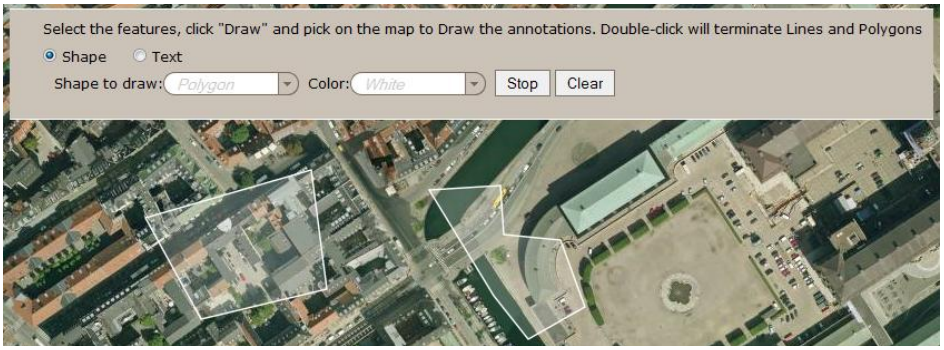


Figure 42: Drawing Polygons

5.1.2 Drawing text

Select the Text option to change the annotations window to text mode. In this mode you can select:

- The text to draw
- The colour of the text
- The background colour of the text

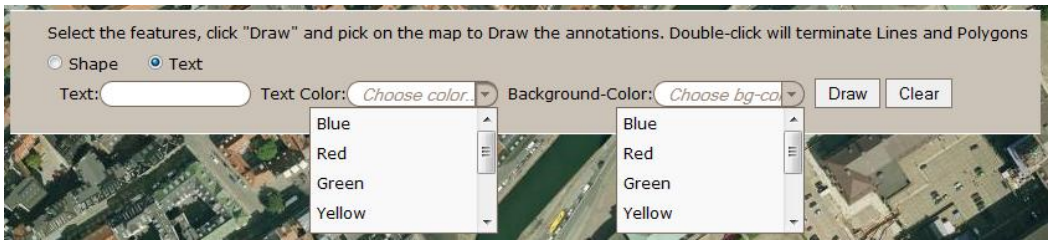


Figure 43: Drawing Text menu

5.1.2.1 *Drawing text*

- Type the desired text in the text box and select the text and background colours.
- Click the **Draw** button to start drawing the text
- Click on the map to select the starting position for the text
- Repeat the procedure as needed

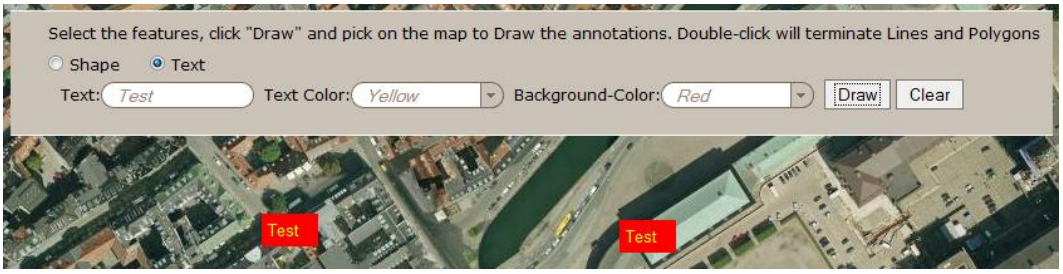


Figure 44: Drawing texts

6 Additional Tools

On the top of the screen there is a button to access to an extra set of tools on the available datasets.

Figure 45: Additional Tools

Tool	Description
	Reverse Geocoding tool
	Show Coordinates tool
	Year Selection tool
	Oblique Selection tool
	Image Layer Priority tool
	Overlays tool

6.1 Reverse Geocoding tool

BlomWEB™ Viewer allows its users to obtain the address of any point in an image corresponding to an urban area with a simple click.

To do this, click on the Reverse Geocoding button to activate the function and then click on any point on the map. The selected address will be displayed on the button text area.

The geocoding is provided according to the selected geocoding tool in the upper part of the interface (DeCarta, OSM). See Section 0 for details. If OSM is selected as geocoder and you are clicking on a Point of Interest (POI), information about it, if available in the OSM database, will be displayed instead of the address of the point.

Note that this function works in any available view (Map, Ortho, Oblique or Hybrid).

6.2 Show Coordinates tool

BlomWEB™ Viewer allows its users to obtain the coordinates of any point in an image corresponding with a simple click.

To do this, click on the Show Coordinates button to activate the function and then click on any point on the map. The coordinates will be displayed on the button text area in Spherical Mercator projection and Latitude, Longitude format

Note that this function works on any available view (Map, Ortho, Oblique or Hybrid).

6.3 Year Selection tool

As Blom continuously updates the available datasets for the cities in Europe, the BlomURBEX™ geoserver stores all this data providing historical information about them.

BlomWEB™ Viewer lets you select the different available years for any given city with the use of the Year Selection Tool.

When you click on the Year Selection Tool the following pop-up window will appear.

Figure 46: Year Selection Tool

The system will show images in the current area for the selected range of years, starting on the most recent one. If there are no images for the range, the screen will appear black. The interval can be defined by dragging the two sliders on top of the years.

6.3.1 Year selection and MultiView

Note that this tool can be easily combined with the MultiView feature on the viewer, so you can easily display two different views of the same city in different years.

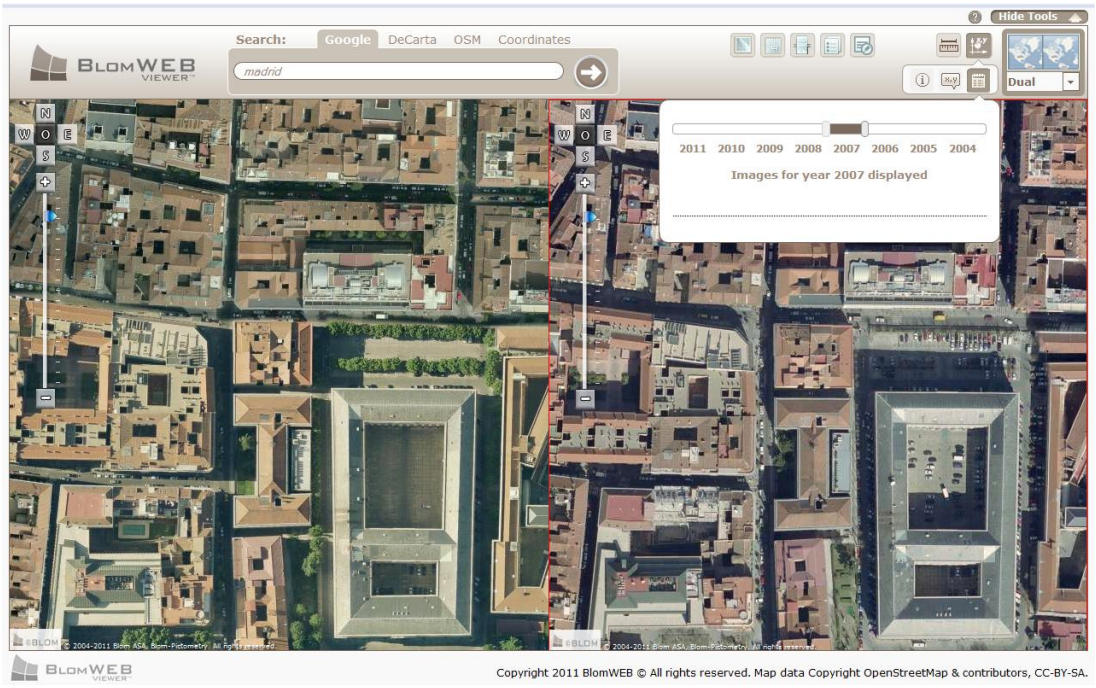


Figure 47: Multiview with different imagery years

6.4 Oblique Selection tool

In order to produce Oblique imagery of urban areas the aircraft capturing the images makes several passes over the cities to ensure capturing the datasets with enough overlap. This makes that a given point in a city is often covered by more than 10 oblique images per year.

The Oblique Selection tool allows you to see how many images that cover the current center of the screen in current orientation are there. If you click on the **All Orientations** option, the list will display all available oblique images regardless of orientation.

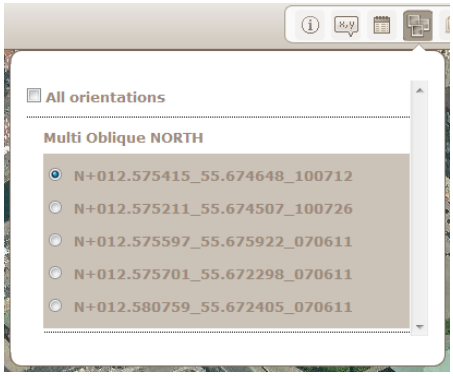


Figure 48: Oblique Views Selection

You can select any Oblique view from the list to display it immediately. Note that the naming of the images include the coordinates of the central point, and the date of its capture in YYMMDD format (Year-Month-Day).

Note that this tool is available only if you are seeing Natural Obliques (as Orthorrectified Obliques are Ortho images in all senses).

6.5 Imager Layer Priority tool

BlomURBEX™ imagery is composed of Baselayers and Overlays. The simplest difference between them is that Overlays have transparency, so they can be displayed of top of other layers, and Baselayers cannot.

Due to this, Baselayers are given a visualization priority, so BlomWEB™ Viewer will display one layer or another depending on the zoom level. This way, low resolution layers such as Satellite Imagery can be displayed only at very far zoom levels, and high resolution layers such as BlomORTHO™ layers can be displayed at close zoom levels.

Baselayer priority is assigned by default, but can be changed if needed using the Baselayer Priority tool. Selecting the button will display the following window:

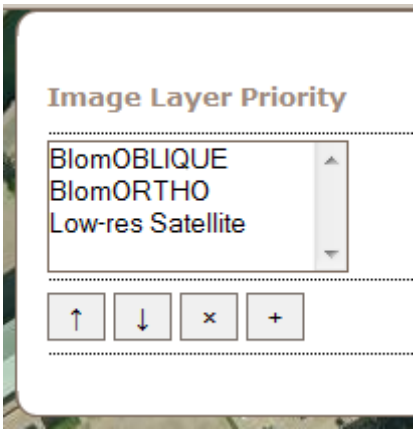


Figure 49: Image Layer Priority

Layers displayed on top of the list will be displayed first if available, and layers displayed at the bottom will be displayed last (less priority).

Select a layer and click this button to move it up in the layers list.

Select a layer and click this button to move it down in the layers list.

Select a layer and click this button to delete it from the layers list. It won't be visible any more

Click this button to add a new layer by typing its name

Default layers are:

- **BlomOBLIQUE™:** data layers including 10-15cm vertical and oblique images of urban areas.

- **BlomORTHO™:** national (full country) vertical images with variable resolution owned by Blom or served under licence agreement of the appropriate vendors.
- **Low-res satellite:** Lo-Res imagery to serve as reference on far zoom levels.

6.6 Overlay Selection tool

This tool allows activating/deactivating the different overlay data available on BlomURBEX™.

The most important use of this tool, is to show the TeleAtlas vector data for Europe. This data has been rasterized in several towns all over Europe and can be displayed on top of Ortho and Oblique images creating an Hybrid View mode. Note that not all cities in BlomURBEX™ have its corresponding rasterized street layer yet

After selecting the tool, a list of available layer will appear and you can select/unselect them by clicking on the checkbox on the left.

Layers available by default are:

- **Streets:** Streets overlay layer for urban areas in Europe.
- **BlomNavigation:** same layer as shown on the *Blom 3D Enhanced Urban Attributes* demo scenario.
- **Solar Roofs UK:** same layer as shown on the *BlomURBEX custom layer – solar roofs* demo scenario.
- **Hill Shade:** a hill shade layer created from DTM data. Only available in some regions and for some users.

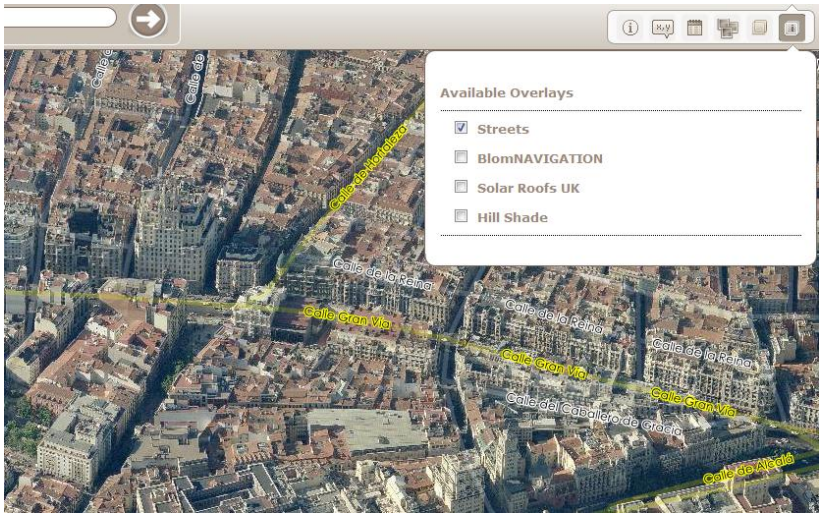


Figure 50: Street Layers Overlay selected over Oblique image

7 BlomURBEX 3D™ View Controls

BlomURBEX 3D™ is an on-line platform that streams the photorealistic 3D urban models produced by Blom and allows its integration in different end-user application with the use of its API and SDKs.

The BlomWEB™ viewer includes direct access to BlomURBEX 3D™, allowing user to view and navigate through the Blom 3D model repository without the need of using a different viewer application.

Available data models in BlomURBEX 3D™ are:

- BlomURBEX™ Ortho imagery including overlays.
- Urban 3D models in four different Levels of Detail (LOD)[2]
- Digital Terrain Models (DTMs)

7.1 Accesing the BlomURBEX 3D™ Viewer

To change to the 3D view in BlomWEB™, just select 3D in the view selection control. The screen will switch to 3D mode and will show the 3D model centered on the coordinates of the previous center of the screen in 2D mode.

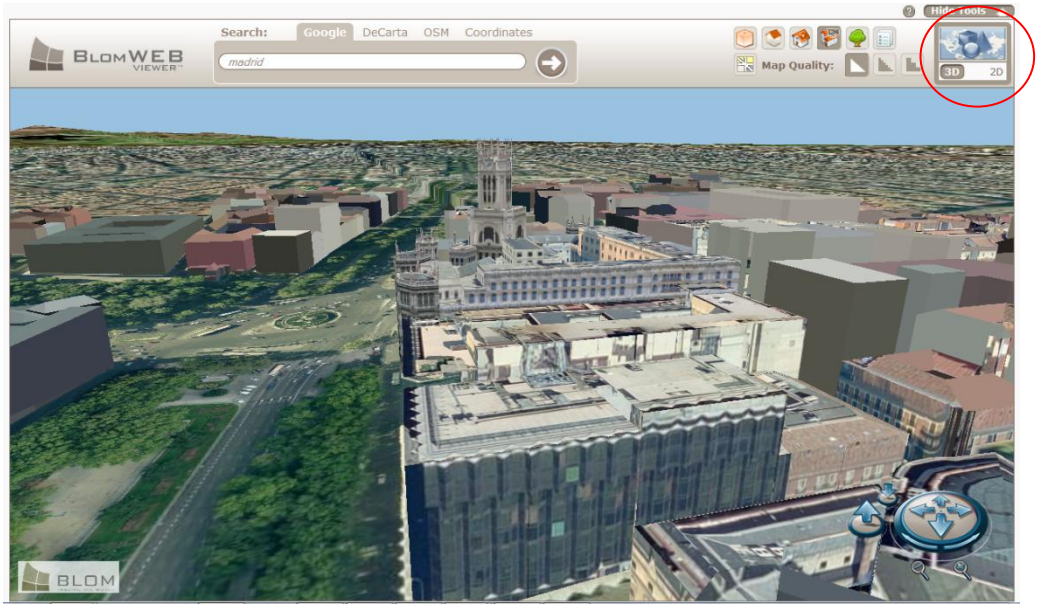


Figure 51: 3D View

[2] Refer to the BlomURBEX 3D™ Whitepaper for details on the different LODs for Blom3D™ models.

7.2 Navigating through the 3D models

To move and rotate the models and the viewing camera you can use the Navigation Pad located in the bottom right part of the screen, or use the mouse and keyboard.

7.2.1 Navigation Pad

- Use the central arrows to move the models forward, backwards, left and right.
- Use the leftside up and down arrows to move the camera up and down (sky/ground)
- Use the arrows located in the central base to spin left and right
- Use the magnifying glasses to zoom in and out.

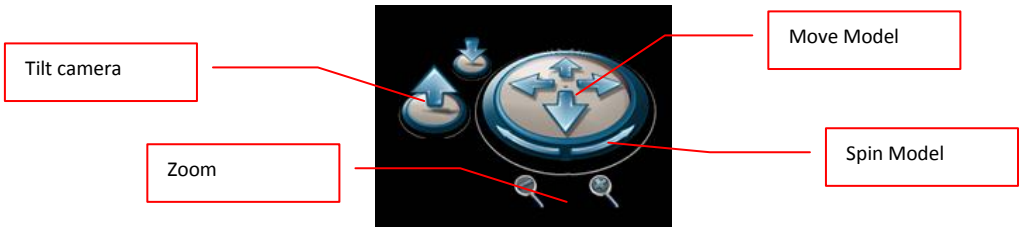


Figure 52: 3D Navigation Pad

7.2.2 Mouse controls

- Use the central mouse wheel to zoom in and out.
- Left click and drag to move the models forward, backwards, left and right
- Right click and drag to spin left and right
- Press Shift and right click, and then drag to move the camera up and down
- Make a double left click to zoom in
- Make a double right click to zoom out
- Make a double middle click to point the camera to North.

7.2.3 Keyboard controls

- Use the arrow keys to move the models forward, backwards, left and right.
- Press shift and the up/down arrow keys to tilt the camera up and down
- Press shift and the right/left arrow keys to rotate the camera clockwise
- Press Ctrl and the right/left arrow keys to rotate the camera counterclockwise
- Press Ctrl and the up/down arrow keys to zoom in and out.

7.3 Level of Detail (LOD) selection

Blom3D™ models are available on 4 different Levels of Detail:

- **LOD 1 (Block Model)**: These are 3D buildings represented as parallelogram blocks, with no information on roofs or additional structures.

- **LOD 2 (RoofTop Model)**: This model adds roof structure and other constructions present on the buildings.
- **LOD3 (Library Texture Model):** This is a rooftop (LOD2) model to which library textures have been added.
- **LOD4 (Photo-realistic Texture Model):** This a rooftop model in which the building textures are extracted from the BLOM oblique images.

Refer to the **Blom3D™ Product Description** for a more detailed description of these LODs.

In BlomWEBTM Viewer it is possible to select dynamically the LOD to display by clicking on one of the four **LOD** buttons available. Note that the currently selected LOD will be highlighted.

Figure 53: LOD Selection

7.4 Edit Mode

The BlomURBEX 3D™ Viewer included in BlomWEB™ includes an Edit Mode. In this mode, users can perform different operations on any building, such as retrieve information, move or delete the building, or add new buildings from local 3D models located on his/her computer.

Edits done can be saved on the local machine, and can be later delivered to Blom in order to submit changes to the model to the BlomURBEX 3D™ Server.

To enter Edit Mode, press the “E” key on your keyboard. A toolbox will appear. The different available options are:

Tool Icon	Action
	Enable/disable edit layer
	Move selected building using the arrow keys
	Delete selected building
	Revert to last saved version, ignoring current changes
	Save into local disk
	Clean all history

To use the Edit Toolbox, you need to select a building. Double click a building to select it.

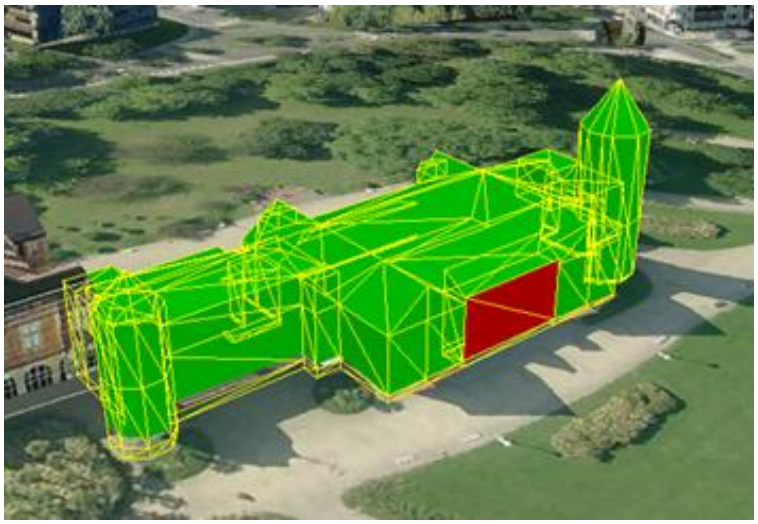


Figure 54: 3D Model Selected in the Viewer

Selected buildings will be painted in green showing the wireframe mode. It is possible to select different polygons in the façade to interact with them. The selected polygon will be displayed in red.

Once the building is selected you can delete or move using the tools described above.

7.4.1 Changing textures in the building

You can select any image file in .JPG, .BMP or .TGA mode and drag and drop it on to the selected 3D model. The image file will be pasted on the selected façade (in red).

Figure 55: Texture Replacement

7.4.2 Adding new buildings

You can drag and drop 3D models to the viewer screen to automatically add them to the model.

Valid formats are OBJ and VRML. The models will be represented according to their orientation and georeferency and can be moved using the arrow keys, but not rotated.

Changes will be stored locally and will be lost in later sessions unless they are saved with the Save button.

Figure 56: External 3D model dropped on the London 3D city model